

REMARKS

Status of Claims:

Claims 10-18 and 20 are present for examination.

Prior Art Rejection:

Claims 10, 11 and 14-20 stand rejected under 35 U.S.C. § 102(b) as anticipated by Nomura (CA 2,112,145). Further, claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Nomura in view of Takada (US 6,088,670). The Examiner's rejections are respectfully traversed.

The differences between applicant's invention and the primary Nomura reference may be seen from the below discussion.

The constitution according to (CA 2,112,145) (Nomura et al.) is as follows:

- (1) As for the frame with errors in the speech parameters such as a gain and a spectral parameter (filter coefficients),
- (2) by repeatedly using the speech data in the past frame by "bad frame masking unit",
- (3) a speech signal is reproduced for the frame with errors.

In addition, although the "bad frame masking unit" is divided into the voiced one and the unvoiced one, each is considered to be the fixed processing.

On the other hand, the features according to the present invention are:

- (a) in the section of unvoiced speech (a section of only the background noise without the speech),
- (b) by using a smoothing method based on "decoded information" (the speech parameters such as a gain and filter coefficients indicating the background noise),

- (c) smoothing of the speech parameters indicating the background noise is made in terms of time.

This feature is equivalent to changing the filter used for smoothing according to the characteristic of a background noise signal in an embodiment.

The object of the reference is to reproduce a speech signal for the frame with errors (to apply the above-mentioned processing to only the frame with errors), and it is completely different from the present invention which aims at an improvement of the sound quality of the background noise.

From the viewpoint of a constitution, according to the reference, the signal of the present frame is reproduced by repeatedly using the speech parameters of the past frame. For this reason, when it is applied to the transition section of the voiced speech and the unvoiced speech, or to the background noise in which power fluctuates in terms of time (for example, the noise in the office environment with various kinds of sound sources such as people's voices or call sounds of telephones, etc.). there is a problem of degrading the sound quality.

On the other hand, according to the present invention, the smoothing method based on the "decoded information" is used. Since the speech parameters of the "decoded information", that is, the gain and the filter coefficients, etc. indicate the character of the background noise, it becomes possible, according to the present invention, to make the appropriate smoothing of said speech parameters by the smoothing method corresponding to the characteristic of the background noise. As a result, it has the effect that good speech quality can be obtained for said transition section and various kinds of noises also.

In view of the above, the present invention, in comparison with the reference, is completely different in all respects of the object, the constitution, and the effect.

In order to better differentiate and clarify applicant's invention as compared to the prior art, applicant has amended the last paragraph of claim 1 to make it clear that the excitation signal is obtained and subsequently the decoding of the speech signal is obtained by means of the filter. Thus, applicant has amended claim 10, for example, by reciting a

means for obtaining an excitation signal by multiplying the decoded sound source signal by the decoding gain after performing the smoothing processing; and means for decoding the speech signal by driving a filter having the decoded filter coefficients by the excitation signal obtained from the means for obtaining. This claim language is deemed to more clearly emphasize the distinguishing features of applicant's invention.

With regard to Takada, the Examiner has pointed out that the voice detector (col. 8, lines 13-53) according to Takada (US 6,088,670) corresponds to wherein said identification/classification means performs identification/classification operation using a value obtained by averaging for a long term a variation amount based on a difference between the decoded filter coefficients and their long-tent average" in claims 12, 13. However, the voice detector according to Takada inputs only a speech signal itself. Therefore, an application of Takada to the decoder which cannot use a speech signal as an input is impossible.

On the other hand, according to claims 12 and 13, the voice detection is performed based on the "decoded information (obtained from the input to an encoder)", such as "decoded filter coefficients". Therefore, claims 12 and 13, relating to a decoder and having the above-mentioned distinctive feature of using information as obtained from a decoder, have nothing to do with Takada.

It may be seen from the above discussion that Nomura does not anticipate applicant's invention as recited in independent claims 10 and 20 and, thus, does not anticipate claims dependent therefrom. Moreover, the combination of Nomura and Takada does not make obvious applicant's invention under the provisions of 35 U.S.C. § 103.

Acknowledgment of Formal Drawings:

The Examiner is again requested to acknowledge receipt and approval of the formal drawings for Figs. 1, 2 and 4 containing the amendments made thereto which were filed in the amendment dated May 5, 2003.

Conclusions:

The application is believed to be in condition for allowance and an early indication of same is earnestly solicited.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 5/27/04

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